

radiation dose of at least 15 kGray.

16. (NEW) The method of claim 12 wherein said branching index is less than 0.7.

Remarks

This application has been carefully reconsidered in view of the Office Action of April 8, 2003. By this response, independent claim 1 has been amended to specify “enhanced” long chain branching since this quantitative term is considered to be more appropriately descriptive of applicant’s invention than the original terminology. In addition, amendments of a formal nature have been made to the claims and claims 4 and 5 have been amended in order to avoid dependency from multiple dependent claims. Claims 9, 10 and 11 have been added in order to further define the polypropylene in terms of electron beam energy and radiation dose. Support for the subject matter of claims 9, 10 and 11 is found in the paragraph bridging pages 7 and 8 of the specification. In addition, process claim 8 has been canceled, and new process claims 12 through 16 are presented herewith.

Reconsideration and allowance of this application in view of the foregoing amendments and the following remarks is respectfully requested.

The rejection of claims 1-4, and 7 under 35 U.S. §103 as unpatentable over the patent to Saito et al. is respectfully traversed. It will be noted initially that all of applicant’s claims are directed to polypropylene having enhanced long chain branching or a process for producing such polypropylene. The patent to Saito, et al. is directed to a polypropylene characterized in the reference as being a “modified” polypropylene. This modified polypropylene is specifically described in Saito et al. as being a linear polypropylene and the terminology employed in Saito et al. characterizing the linear polypropylene is provided by the phrase “a degree of branching of substantially 1.” The Saito et al. reference, in defining “substantially 1” as being values from

about 0.95 to 1.05, is simply meant to recognize that the long chain branching, if any, is below its detection limit. In other words, the Saito et al. terminology of 0.95 to 1.05 is used simply to recognize the statistical error range observed in repeated measurements on the same polymer.

The foregoing description in the reference highlights the substantial difference between the modified polypropylene of Saito et al. and the polypropylene having enhanced long chain branching in accordance with the present invention. The Saito et al. polypropylene is, for all practical purposes, a linear polypropylene. Saito et al. specifically teaches that the modified polypropylene disclosed there does not have long chain branching, or if it does, it is so de minimis as to be beyond detection. The polypropylene of the present invention is directly contrary to that disclosed in Saito et al. in that applicant's polypropylene does have long chain branching. On this issue, it is noted that in applicant's independent claim 7, the polypropylene is characterized as having a branching index of lower than 0.7 and not 1, as stated in the office action.

Each of the polypropylene claims requires an electron beam energy of at least 5 MeV, or in the case of claims 2 and 10, at least 10 MeV. As has been acknowledged in the office action, Saito et al. does not disclose an electron beam energy level of at least 5 MeV. To the extent the Examiner argues that it would be obvious of one of ordinary skill in the art to modify the Saito et al. process to involve electron beam energy level of at least 5 MeV (or at least 10 MeV), applicant would respectfully disagree. There is no reason to infer from the relatively low amount of absorbed radiation in the Saito et al. examples, ranging down to as low as 0.8 kGray, that the electron energy ray level called for in applicant's claims would be used in operation of the Saito et al. process. There is, in fact, no motivation provided by the prior art reference to modify the Saito et al. procedure to employ an electron beam having an energy of at least 5 MeV (or at least 10 MeV) as required in applicant's claims.

Unobviousness is determined initially by a consideration of the prior art disclosure, and applicant would respectfully submit that there is nothing in the reference to suggest control of an electron beam energy level for any purpose. Clearly, there is nothing to suggest that the energy level be controlled above the level specified in the claims. Applicant would respectfully submit that a mere assertion of obviousness, without reasons why the invention is considered to be obvious, is not sufficient to support a rejection under 35 USC §103. Thus, in *In re Cofer*, 148 USPQ 268 (C.C.P.A. 1966), the court stated at page 271:

“Necessarily it is facts – which must support the legal conclusion of obviousness under 35 USC §103. Merely stating that a compound or composition is obvious, without adequate factual support, is not sufficient.”

Here, as in *In re Cofer*, the rejection based upon Saito et al. amounts simply to a statement that the invention is obvious without giving facts other than those found in applicant’s specification, in support of this conclusion.

The Examiner’s attention is also respectfully invited to MPEP §2143.01, which states in the third paragraph:

“Obvious can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.”

Here, the only basis for modifying the reference to provide the claimed electron energy beam level is found in applicant’s specification and not in the prior art.

Further, it will be noted that the experimental work in Saito et al. indicates that the electron beam energy is well below the 5 MeV value specified in applicant’s independent claims 1 and 12. In this regard, Saito et al., in the first full paragraph of column 9, describes irradiation

with an electron radiator to provide an absorbed dosage of 3.0 kGray at a conveyor velocity of 3.23 meters/minutes. This would indicate a low level of electron beam energy as can be seen from examination of the results displayed in applicant's specification in Table 1 on page 16. As shown in Table 1, irradiation with an electron beam energy of 10 MeV at a conveyor speed of 2.1 meters/minute resulted in an absorbed radiation dose of 60 kGray. For the somewhat higher conveyor speed referenced in Saito et al. (3.23 meters/minutes), the absorbed dose would be reduced from a value of about 60 kGray to about 40 kGray. This is for an electron beam energy of 10 MeV. Since the actual dose in Saito et al. was 3 kGray, less than 10% of the calculated value of 40 kGray for an electron beam energy of 10 MeV, it is evident that the electron beam energy in Saito et al. is less than 10% of 10 MeV, or less than 1 MeV. Thus, not only is it unobvious in view of Saito et al. to carry out the electron beam radiation at those energy levels specified in applicant's claims, to do so would be directly contrary to the implicit teachings of the reference.

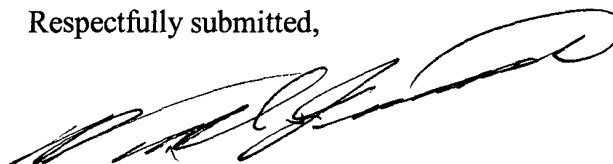
Applicant's original process claim 8 has been cancelled and has been replaced with claims 12-16. Claim 12 specifies the process of providing a mixture of polypropylene and grafting agent and irradiating this mixture with an electron beam of at least 5 MeV, with a radiation dose of 5-100 kGray to produce a polymer having enhanced long chain branching. The claim further recites that the recovery of the polypropylene polymer, having a branching index which is lower than the branching index of a linear polypropylene. The patent to Saito et al. clearly does not disclose this process since Saito et al. specifies that the branching index of the modified polypropylene is the same as the linear polypropylene. Claim 13 depends from claim 12 and specifies an electron beam energy level of at least 10 MeV and claims 14 and 15 recite radiation doses of 10 and 15 kGray, respectfully. Clearly, these radiation doses are not even remotely suggested by the prior art reference. Claim 16 specifies that the branching index of the

recovered polymer is less than 0.7. This limitation, as noted above, is also found in claim 7 and clearly is not suggested by the prior art.

For reasons advanced above, it is respectfully submitted that all of the claims in this application are patentable over the prior art. Accordingly, an early reconsideration and allowance of this application is respectfully requested.

The Commissioner is authorized to charge our Deposit Account Number 12-1781 for any fee that may be due in connection with this communication.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'William D. Jackson', with a large, stylized flourish at the end.

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